Claims

Please amend the claims as follows:

1. (Currently amended) A receiver, comprising:

a demodulator unit configured for ~~determining a code from each of a plurality of signals and for~~ demodulating one or more of ~~the~~ a plurality of signals; and

a processing engine communicatively coupled to the demodulator unit and configured for generating a matrix that is a linear combination of one or more interference vectors ~~of determined codes~~, wherein each ~~element~~ of the interference vectors comprises a component of ~~the~~ an interfering signal ~~determined codes~~ and wherein the matrix is used to selectively substantially reduce energy from one or more of the signals.

2. (Original) The receiver of claim 1, further comprising a searcher finger configured for selecting signals for demodulation from said plurality of signals and for determining one or more codes from selected signals.

3. (Original) The receiver of claim 2, wherein the demodulator unit comprises a plurality of demodulator fingers configured for demodulating the selected signals.

4. (Original) The receiver of claim 2, wherein the determined codes comprise code offsets in time from one another.

5. (Currently amended) The receiver of claim 1, wherein the matrix comprises ~~one~~ a composite interference vector ~~having one or more elements, wherein each element of the vector includes a component of a determined~~ constructed using code information and ~~a relative~~ amplitude information ~~of one of the signals associated with the determined code~~.

6. (Currently amended) The receiver of claim 1, wherein the demodulator unit is assigned to at least one of a multipath signal from a base station in soft handoff with the mobile unit or to a strong multipath signal from a base station not in soft handoff. ~~each vector of the matrix has one~~

~~or more elements, each element comprising a component of a determined code associated with one of the plurality of signals~~.

7. (Original) The receiver of claim 1, wherein the receiver further comprises a radio frequency front end configured for receiving the signals.

8. (Currently amended) The receiver of claim 7, wherein the processing engine comprises a channel selector configured for selecting components of ~~the~~ determined codes from signals selected for energy reduction.

9. (Original) The receiver of claim 8, wherein the processing engine is further configured to generate a cancellation operator used to substantially reduce the energy of the signals selected for energy reduction.

10. (Original) The receiver of claim 9, wherein the cancellation operator comprises a projection operator $P_s^{\perp}$ having the following form:

$$P_s^{\perp} = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

11. (Original) The receiver of claim 10, wherein the processing engine comprises an application unit configured for applying the projection operator $P_s^{\perp}$ to a desired code x to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^{\perp}$ is applied to the desired code according to the following form:

$$P_s^{\perp} x = \left(I - S(S^T S)^{-1} S^T\right) x.$$

12. (Currently amended) The receiver of claim ~~1~~ 2, wherein the determined codes are ~~selected from a group consisting of a combination of a~~ spreading code<u>s</u> ~~and a covering code~~.

13. (Previously presented) The receiver of claim 12, wherein the spreading code is a short code.

14. (Currently amended) The receiver of claim 1 ~~12~~, wherein the processing engine further comprises a Fast Walsh Transform module configured for correlating a despread received signal against a plurality of Walsh codes ~~covering code is selected from a group consisting of a Walsh code and a quasi orthogonal function code~~.

15. (Original) The receiver of claim 1, wherein the signals are selected from a group consisting of cdma2000 signals and cdmaOne signals.

16. (Currently amended) A method for reducing interference to a desired signal, comprising:

~~determining~~ demodulating at least one ~~code from each~~ of a plurality of signals;

constructing at least one interference vector from the at least one demodulated signal of a plurality of signals, wherein the at least one interference vector comprises components of an interfering signal;

generating a matrix that is a linear combination of one or more interference vectors ~~based on determined codes, wherein each element of the vectors comprises a component of the determined codes~~; and

using the matrix to selectively substantially reduce energy from one or more of the signals thereby reducing interference.

17. (Currently amended) The method of claim 16, further comprising ~~demodulating~~ searching for one or more signals from said plurality of signals for assigning to at least one demodulating unit.

18. (Currently amended) The method of claim 16, further comprising determining one or more codes for signals assigned to said demodulating unit ~~selected from said plurality of signals~~.

19. (Currently amended) The method of claim 16, wherein generating comprises ~~constructing the matrix from one~~ summing a plurality of said interference vectors to form a composite interference vector ~~having one or more elements, wherein each element of the vector includes a~~

~~component of a determined code and a relative amplitude of one of the signals associated with the determined code~~.

20. (Currently amended) The method of claim 16, wherein ~~generating~~ constructing the said at least one interference vector comprises constructing the ~~matrix~~ interference vector using code information and amplitude information ~~from a plurality of said one or more vectors, the matrix comprising a plurality of selected vectors, wherein each of the plurality of selected vectors has one or more elements, each of the one or more elements comprising a component of a determined code associated with one of the plurality of signals~~.

21. (Original) The method of claim 16, wherein using the matrix comprises generating a cancellation operator for application to a desired code to substantially reduce the energy of the signals selected for energy reduction.

22. (Original) The method of claim 21, wherein generating the cancellation operator comprises generating a projection operator $P_s^{\perp}$ having the following form:

$$P_s^{\perp} = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

23. (Original) The method of claim 22, further comprising applying the projection operator $P_s^{\perp}$ to the desired code to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^{\perp}$ is applied to the desired code according to the following form:

$$P_s^{\perp} x = \left(I - S(S^T S)^{-1} S^T\right) x,$$

where x is the desired code.

24. (Currently amended) A system for reducing interference to a desired signal, comprising:

means for ~~determining~~ demodulating ~~a code~~ at least one signal from ~~each of~~ a plurality of signals;

means for constructing one or more interference vectors from the at least one demodulated signal;

means for generating a matrix that is a linear combination of one or more interference vectors ~~based on determined codes~~, wherein each ~~element~~ of the interference vectors comprises ~~a~~ components of an interfering signal ~~the determined codes;~~ and

means for using the matrix to selectively substantially reduce energy from one or more of the signals thereby reducing interference.

25. (Currently amended) The system of claim 24, further comprising means for ~~demodulating~~ searching for one or more signals from said plurality of signals.

26. (Original) The system of claim 24, further comprising means for determining one or more codes of signals selected from said plurality of signals.

27. (Currently amended) The system of claim 24, wherein the means for generating comprises summing means for summing a plurality of interference vectors to form a ~~constructing the matrix from one~~ composite interference vector ~~having one or more elements, wherein each element of the vector includes a component of a determined code and a relative amplitude of one of the signals associated with the determined code~~.

28. (Currently amended) The system of claim 24, wherein the means for ~~generating comprises a means for~~ constructing the one or more interference vectors comprises means for constructing said one or more interference vectors using code information and amplitude information. ~~matrix from a plurality of said one or more vectors, the matrix comprising a plurality of selected vectors, wherein each of the plurality of selected vectors has one or more elements, each of the one or more elements comprising a component of a determined code associated with one of the plurality of signals.~~

29. (Original) The system of claim 24, wherein the means for using the matrix comprises means for generating a cancellation operator for application to a desired code to substantially reduce the energy of the signals selected for energy reduction.

30. (Original) The system of claim 29, wherein the means for generating the cancellation operator comprises means for generating a projection operator $P_s^{\perp}$ having the following form:

$$P_s^{\perp} = I - S(S^T S)^{-1} S^T,$$

where I is an identity matrix, S is the matrix and S^T is a transpose of the matrix.

31. (Original) The system of claim 30, further comprising means for applying the projection operator $P_s^{\perp}$ to the desired code to selectively substantially reduce one or more of the plurality of signals, wherein the projection operator $P_s^{\perp}$ is applied to the desired code according to the following form:

$$P_s^{\perp} x = \left(I - S(S^T S)^{-1} S^T\right) x,$$

where x is the desired code.

32. (Currently amended) A processing engine, comprising:

a matrix generator configured for generating a matrix ~~having~~ from one or more interference vectors, wherein the matrix is generated based on a linear combination of the one or more interference vectors, ~~plurality of codes~~ and wherein each ~~element~~ of the interference vectors comprises a component of ~~the~~ interfering signals ~~codes~~; and

an application unit communicatively coupled to the matrix generator and configured for using the matrix to selectively substantially cancel one or more of a plurality of signals.